

## IN THE CLAIMS

While various embodiments have been described above, it should be understood that they have been presented by way of example only, and not limitation. Thus, the breadth and scope of a preferred embodiment should not be limited by any of the above described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.

What is claimed is:

- 1 1. A disk drive write head comprising:
  - 2 a bottom pole;
  - 3 a write gap layer on said bottom pole;
  - 4 a coil on said write gap layer;
  - 5 a photoresist insulation layer on said coil;
  - 6 an insulation shell layer on said photoresist insulation layer; and
  - 7 a top pole on said insulation shell layer.
- 1 2. The disk drive write head as recited in claim 1, wherein:
  - 2 said insulation shell layer is formed by a process chosen from the group
  - 3 consisting of Physical Vapor Deposition (PVD), sputter deposition, ion beam
  - 4 deposition, Chemical Vapor Deposition (CVD), plasma enhanced Chemical Vapor
  - 5 Deposition (PECVD), Low Pressure Chemical Vapor Deposition (LPCVD) and
  - 6 Atomic Layer Chemical Vapor Deposition (ALCVD).
- 1 3. The disk drive head as recited in claim 1, wherein:
  - 2 said insulation shell layer is formed from materials chosen from the group
  - 3 consisting of dielectric materials,  $\text{Al}_2\text{O}_3$ ,  $\text{AlN}$ ,  $\text{AlON}$ ,  $\text{SiO}_2$ ,  $\text{Si}_3\text{N}_4$ ,  $\text{SiON}$ ,  $\text{Ta}_2\text{O}_5$ ,
  - 4 and  $\text{HfO}_2$ .

1 4. The disk drive write head as recited in claim 1, wherein:  
2 said disk drive write head includes a read head.

1 5. A disk drive write head comprising:  
2 a bottom pole;  
3 a first insulation layer on said bottom pole;  
4 a coil on said dielectric capping layer;  
5 a photoresist insulation layer on said coil;  
6 an insulation shell layer on said photoresist insulation layer;  
7 a write gap on said insulation shell layer; and  
8 a top pole on said write gap layer.

1 6. The disk drive write head as recited in claim 5, wherein:  
2 said insulation shell layer is formed by a process chosen from the group  
3 consisting of Physical Vapor Deposition (PVD), sputter deposition, ion beam  
4 deposition, Chemical Vapor Deposition (CVD), plasma enhanced Chemical Vapor  
5 Deposition (PECVD), Low Pressure Chemical Vapor Deposition (LPCVD) and  
6 Atomic Layer Chemical Vapor Deposition (ALCVD).

1 7. The disk drive write head as recited in claim 5, wherein:  
2 said insulation shell layer is formed from materials chosen from the group  
3 consisting of dielectric materials,  $\text{Al}_2\text{O}_3$ ,  $\text{AlN}$ ,  $\text{AlON}$ ,  $\text{SiO}_2$ ,  $\text{Si}_3\text{N}_4$ ,  $\text{SiON}$ ,  $\text{Ta}_2\text{O}_5$ ,  
4 and  $\text{HfO}_2$ .

1 8. The disk drive write head as recited in claim 5, wherein:  
2 said disk drive write head includes a read head.

- 1 9. A method of fabricating a disk drive write head comprising the steps of:
- 2 A) forming a bottom pole;
- 3 B) forming a write gap layer on said bottom pole;
- 4 C) forming a coil on said write gap layer;
- 5 D) forming a photoresist insulation layer on said coil;
- 6 E) forming an insulation shell layer on said photoresist insulation layer;
- 7 and
- 8 F) formation of a top pole on said insulation shell layer.

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1 10. The method of fabrication as recited in claim 9, wherein:

2 said step of forming said insulation shell layer of step E is done by a process

3 chosen from the group consisting of Physical Vapor Deposition (PVD), sputter

4 deposition, ion beam deposition, Chemical Vapor Deposition (CVD), plasma

5 enhanced Chemical Vapor Deposition (PECVD), Low Pressure Chemical Vapor

6 Deposition (LPCVD) and Atomic Layer Chemical Vapor Deposition (ALCVD).

1 11. The method of fabrication as recited in claim 9, wherein:

2 said insulation shell layer of step E is formed from material chosen from the

3 group consisting of dielectric materials,  $\text{Al}_2\text{O}_3$ ,  $\text{AlN}$ ,  $\text{AlON}$ ,  $\text{SiO}_2$ ,  $\text{Si}_3\text{N}_4$ ,  $\text{SiON}$ ,

4  $\text{Ta}_2\text{O}_5$ , and  $\text{HfO}_2$

1 12. The method of fabrication as recited in claim 9, wherein said step of forming

2 said insulation shell layer of step E further comprises:

3 a) depositing said insulation shell layer

4 b) masking said insulation shell layer; and

5 c) removing unmasked portions of said insulation shell layer.

1 13. A method of fabricating a disk drive write head comprising the steps of:

2 A) forming a bottom pole;

3 B) forming of a first insulation layer on said bottom pole;

4 C) forming a coil on said capping layer;

5 D) forming a photoresist insulation layer on said coil;

6 E) forming a insulation shell layer on said photoresist insulation layer;

7 F) forming a write gap on said insulation shell layer; and

8 and

9 G) forming a top pole on said write gap layer.

1 14. The method of fabrication as recited in claim 13, wherein:

2 said step of forming said insulation shell layer of step E is done by a process  
3 chosen from the group consisting of Physical Vapor Deposition (PVD), sputter  
4 deposition, ion beam deposition, Chemical Vapor Deposition (CVD), plasma  
5 enhanced Chemical Vapor Deposition (PECVD), Low Pressure Chemical Vapor  
6 Deposition (LPCVD) and Atomic Layer Chemical Vapor Deposition (ALCVD).

1 15. The method of fabrication as recited in claim 13, wherein:

2 said insulation shell layer of step E is formed from material chosen from the  
3 group consisting of dielectric materials,  $\text{Al}_2\text{O}_3$ ,  $\text{AlN}$ ,  $\text{AlON}$ ,  $\text{SiO}_2$ ,  $\text{Si}_3\text{N}_4$ ,  $\text{SiON}$ ,  
4  $\text{Ta}_2\text{O}_5$ , and  $\text{HfO}_2$ .

1 16. The method of fabrication as recited in claim 13, wherein said step of  
2 forming said insulation shell layer of step E further comprises:

3 a) depositing said insulation shell layer

4 b) masking said insulation shell layer; and

5                   c)     removing unmasked portions of said insulation shell layer.

1    17.    A computer disk drive having a write head which includes a coil and a  
2    photoresist insulation layer on the coil, comprising:  
3            an insulation shell layer on said photoresist insulation layer.

1    18.    A computer disk drive as recited in claim 17, further comprising:  
2            a top pole which is formed on said insulation shell layer.

1    19.    A computer disk drive as recited in claim 17, further comprising:  
2            a write gap on said insulation shell layer; and  
3            a top pole on said write gap layer.

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